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| 10/566,865 | 01/31/2006 | Lip Teck Soh | 003D.0086.U1(US) | 2241 |
| 29683 | 7590 | 09/18/2006 | EXAMINER | |
| HARRINGTON & SMITH, LLP 4 RESEARCH DRIVE SHELTON, CT 06484-6212 | | | NGUYEN, PHUONGCHI T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2833 | |

DATE MAILED: 09/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

EV

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|------------------------------|-------------------------------|-------------------------------|--|
| Office Action Summary | Application No. 10/566,865 | Applicant(s) SOH, LIP TECK | |
| | Examiner Phuongchi Nguyen | Art Unit 2833 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-23 and 25-45 is/are rejected.
- 7) ☒ Claim(s) 10 and 24 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>01/31/06</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 6-9, 11-14, 16-17, 19, 21, 23, 25, 27, 31, 33-34, 36-39 and 41-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Grube (US2002/0151194A1).

In regards to claim 1, Grube discloses an electrical connector comprising:

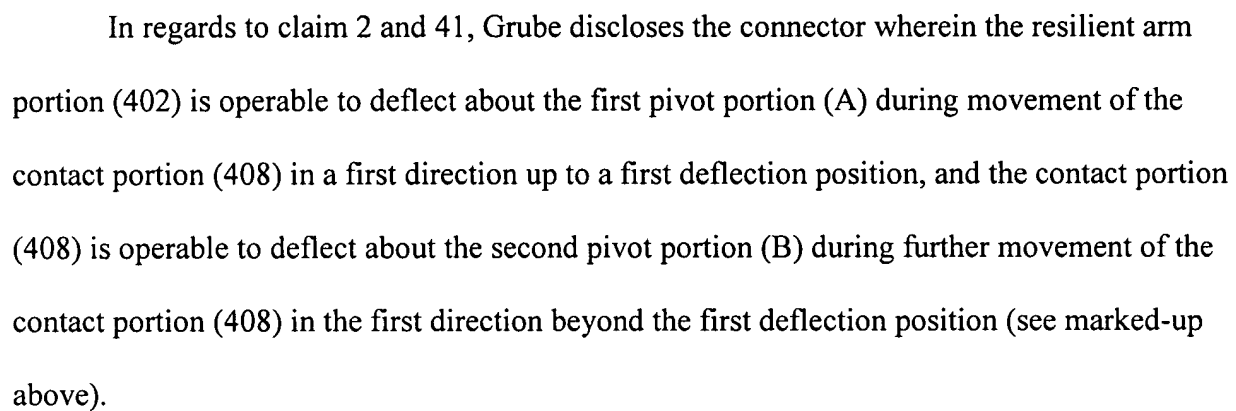
a connector housing (416+140); and

at least one deformable connector terminal arrangement (400+416+140) disposed at the connector housing (416+140), the connector terminal arrangement (400+416+140) comprising:

a terminal (400) (figs. 7A-7B) comprising a movable resilient arm portion (402), a contact portion (408) at one end of the resilient arm portion (402) for connecting to a first electrical point (148) (the contact 400 is one of the embodiment of the terminal 130 as seen in fig. 2C) and a support portion (404) connected to another end of the resilient arm portion (402) and for connecting to a second electrical point (122);

a first pivot portion (A) for pivoting of the resilient arm portion (402) relative to the support portion (404); and

a second pivot portion (B) for pivoting of the contact portion (408) relative to the resilient arm portion (402) (see marked-up below).



In regards to claim 4, Grube discloses the connector wherein the resilient arm portion (402) and the support portion (404) are elongate (figs. 7A-7B).

In regards to claim 7, Grube discloses the connector wherein the first pivot portion (A) is formed integrally with the resilient arm portion (402) and the support portion (404).

In regards to claim 8, Grube discloses the connector wherein the first pivot portion (A) comprises a resilient connecting portion (C) connecting the resilient arm portion (402) and the support portion (404).

In regards to claim 9, Grube discloses the connector wherein the first pivot portion (A) comprises a bend (at A) joining the resilient arm portion (402) and the support portion (404).

In regards to claim 11, Grube discloses the connector wherein the second pivot portion (B) comprises a protuberance (420) disposed on at least one of the housing (416+140) (fig. 7B).

In regards to claim 12, Grube discloses the connector wherein the protuberance (420) of a terminal arrangement (400+416+140) has a rounded (body) surface.

In regards to claim 13, Grube discloses the connector wherein the protuberance (420 or 120) of a terminal arrangement (400+416+140) has a flat (top) surface (fig. 1A) (the terminal 100 is an embodiment of the terminal 400).

In regards to claim 14, Grube discloses the connector wherein the protuberance (420 or 120) of a terminal arrangement (400+416+140) is solid (fig. 1B)

In regards to claim 16, Grube discloses the connector wherein the terminal (400) further comprises the second pivot portion (B), disposed between the resilient arm portion (402) and the contact portion (408).

In regards to claim 17, Grube discloses the connector wherein the second pivot portion (B) is formed integrally with the resilient arm portion (402) (marked-up above).

In regards to claim 19, Grube discloses the connector claim 16, wherein the second pivot portion (B) comprises a bent portion (D) of the resilient arm portion (402).

In regards to claim 21, Grube discloses the connector wherein the second pivot portion (B) is operable to pivot against the support portion (404).

In regards to claim 23, Grube discloses the connector wherein the resilient arm portion (402) is disposed at an angle with respect to the support portion (404) (fig. 7B).

In regards to claim 25, Grube discloses the connector wherein the connector terminal (400) is formed of an electrically conductive material (col. 11, line 28).

In regards to claim 27, Grube discloses the connector wherein the terminal (400) is elongate, with the contact portion (408) at an opposite end from the support portion (404) (fig. 7B).

In regards to claim 31, Grube discloses the connector wherein the support arm portion (404) further comprises a tail portion (E) extending from a free end of the support arm portion (404), to contact (the boundary portion of the) second electrical point (122).

In regards to claim 33, Grube discloses the connector wherein the tail portion (E) comprises a first free end of the terminal (400) (see marked-up above).

In regards to claim 34, Grube discloses the connector wherein the contact portion (408) comprises a second free end of the terminal (400) (fig. 7A).

In regards to claim 36, Grube discloses the assembly comprising a first circuit (140); a second circuit (416); and an electrical connector (terminal 400) for electrically connecting the first circuit (140) to the second circuit (416) (fig. 2C).

In regards to claim 37, Grube discloses the assembly wherein the connector (terminal 400) is mounted to connect the first (140) and second circuits (416) electrically; the first circuit (140) comprises one or more first electrical points (148) with which the one or more contact

portions (408) are in contact; the second circuit (416) comprises one or more second electrical points (122) with which the one or more support portions (404) are in contact (figs. 2C and 7B).

In regards to claim 38, Grube discloses the assembly wherein the one or more resilient arm portions (402) are pivoted about the respective first pivot portions (A); and the one or more contact portions (408) are pivoted about the respective second pivot portions (B) (see marked-up above).

In regards to claim 39, Grube discloses the assembly wherein the first circuit (140) is a printed circuit board (the electrical component 140 such as IC, that must have a printed circuit board).

In regards to claim 42, Grube discloses the assembly wherein the method further comprising mounting the connector (400+416+140) to the second circuit (416) prior moving the first circuit (140) against the biasing force.

In regards to claim 43, Grube discloses the assembly wherein the method further comprising mounting the first circuit (140) to the connector (400+416+140).

In regards to claim 44, Grube discloses the assembly wherein the method wherein mounting the first circuit (140) to the connector (400+416+140) comprises moving the first circuit (140) against the biasing force.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5, 15, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grube (US6811406B2) in view of Ma (US6814587B2).

In regards to claims 5 and 20, Grube discloses the invention generally as claimed, but lacks a bent segment on the contact portion. Ma teaches the contact portion (25) is bent segment having an arched portion for contacting the first electrical point (300)(fig. 5). It would have been obvious to one having ordinary skill at the time the invention was made to modify the contact portion of Grube by having a bent segment as taught by Ma for increasing the contact surface between the terminal and the first electrical points of the electronic component.

In regards to claim 15, Grube discloses the invention generally as claimed, but lacks a hollow protuberance. It would have been obvious to one having ordinary skill at the time the invention was made to modify the protuberance of Grube by having a hollow in the protuberance for the matter of design choice; since Applicant did not explain why the hollow protuberance has more advantage than the solid protuberance, thus, the hollow protuberance is equivalent to the solid protuberance.

In regards to claim 18, Grube discloses the connector wherein the second pivot portion (B) extends from a surface of the resilient arm portion (402) facing the support portion (404).

5. Claims 22, 28, 29, 32, 35 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grube (US6811406B2) in view of Eldridge et al (US6888362B2).

In regards to claim 22, Grube discloses the invention generally as claimed, but lacks a terminal in the connector housing. However, Eldridge et al teaches a terminal (101) in the connector housing (108) (fig. 1C). It would have been obvious to one having ordinary skill at the time the invention was made to modify the connector of Grube by having a housing for the

terminal as taught by Eldridge et al to protect the the deformable terminal which having a second pivot portion from over compressing of the mating connector.

In regards to claim 28, Grube discloses the invention generally as claimed, but lacks the connector housing. However, Eldridge et al teaches the connector housing (108) comprises one or more cavities (forming in 108 where 101 located), with individual ones of the connector terminal arrangements (108+101+100) arranged in individual ones of the cavities (forming in 108 where 101 located) (fig. 1C). It would have been obvious to one having ordinary skill at the time the invention was made to provide on the connector of Grube by having an individual cavities in the connector housing as taught by Eldridge et al for each terminal to protect individual terminal of the connector.

In regards to claim 29, Grube discloses the invention generally as claimed, but lacks the separating walls between adjacent cavities. However, Eldridge et al teaches the separating walls (forming in 108 by the cavities) (fig. 1C). It would have been obvious to one having ordinary skill at the time the invention was made to provide on the connector of Grube by having an individual cavities in the connector housing as taught by Eldridge et al for each terminal to protect individual terminal of the connector.

In regards to claim 32, Grube discloses the invention generally as claimed, but lacks the contact portions and the tail portions of the terminal protruding from individual cavities. However, Eldridge et al teaches the contact portions and the tail portions of the terminal protrude from individual cavities (fig. 2B). It would have been obvious to one having ordinary skill at the time the invention was made to provide on the connector of Grube by having an individual cavities in the connector housing as taught by Eldridge et al with each terminal having the

contact portions and the tail portions to protrude from individual cavities for mating to the mating substrates.

In regards to claim 35, Grube discloses the invention generally as claimed, but lacks the mounting pin. However, Eldrige et al teach the mounting pin (1855) for mounting the housing (having 1834) in the assembly (fig. 18). It would have been obvious to one having ordinary skill at the time the invention was made to provide on the connector of Grube with the mounting pin as taught by Eldrige et al for securing the connector housing and contact terminals to the printed circuit boards.

In regards to claim 45, Grube discloses the invention generally as claimed, but lacks the biasing force achieving by screwing. However, Eldrige et al teach the assembly wherein moving the first circuit (1706) against the biasing force is achieved by screwing (by 1742) the first circuit down (fig. 18). It would have been obvious to one having ordinary skill at the time the invention was made to provide on the connector of Grube with the biasing force achieving by screwing as taught by Eldrige et al for ease assembly.

6. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grube (US6811406B2) in view of Harper, Jr. (US6994565B2).

In regards to claim 26, Grube discloses the invention generally as claimed, but lacks the connector housing forming of the electrically insulating material. However, Harper, Jr. teaches the connector housing (16) is formed of an electrically insulating material (col. 3, lines 60-61). It would have been obvious to one having ordinary skill at the time the invention was made to modify on the connector housing of Grube by forming the housing with an electrically insulating material as taught by Harper, Jr. for increasing the conductivity in the connector assembly.

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7. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grube (US6811406B2) in view of Eldridge et al (US6888362B2) applied as claim 28 above, and further in view of Ma (US6814587B2).

In regards to claim 30, Grube discloses the invention generally as claimed, but lacks the roof portion spaced apart from the based portion. However, Ma teaches individual cavities (103) are defined by a roof portion (1037) spaced apart from a base portion (1038), with the resilient arm portion (206) and the support portion (201) of a connector terminal arrangement disposed within the cavities (103)(figs 3-4). It would have been obvious to one having ordinary skill at the time the invention was made to provide on the connector of Grube by having a roof portion as taught by Ma for preventing over bending of the contact terminals out of the cavity into the neighbor cavities when the connector been not used.

8. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grube (US6811406B2) in view of Neidich et al (US6672879B2).

In regards to claim 40, Grube discloses the invention generally as claimed, but lacks the flex circuit. However, Neidich et al teach the second circuit to be a flex circuit (15) (fig. 1a). It would have been obvious to one having ordinary skill at the time the invention was made to replace one of printed circuit board of Grube by having a flex circuit as taught by Neidich et al for increasing the contact terminals and the contact pads between the printed circuit board and the flexible circuit.

Allowable Subject Matter

9. Claims 10 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

In regards to claim 10, none of prior teaches or suggest the connector wherein the first pivot portion comprises a U-shaped segment joining the resilient arm portion and the support portion, the resilient arm portion being substantially superposed over the support portion.

In regards to claim 24, none of prior teaches or suggests the connector wherein the resilient arm portion is substantially parallel to the support portion.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuongchi Nguyen whose telephone number is (571) 272-2012. The examiner can normally be reached on 8:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Bradley can be reached on (571) 272-2800 ext 33. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PCN

September 14, 2006


TULSIDAS C. PATEL
SUPERVISORY PATENT EXAMINER